

Office Action Summary

Application No.

10/531,873

Applicant(s)

UCHIDA ET AL.

Examiner

NICOLE T. GUGLIOTTA

Art Unit

1794

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7, 9, 11 and 13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7, 9, 11, 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____

- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date: 8/21/2008
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/3/2008 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 7, 9, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (WO 02/081406 A1, Examiner uses US 2004/0033893 as an English language equivalent for purposes of examination in this office action. A full translation of WO 02/081406 A1 will be provided in the next office action), in view of Stobbe (U.S. Patent No. 7,179,430 used as an English language equivalent for WO 00/01463).

4. In regard to claims 7 and 11, Tomita et al. disclose a silicon carbide-based porous material containing silicon carbide particles as an aggregate and metallic silicon (Section [0013]), an organic binder, and the addition of a metal element or compound containing the metal element (Section [0021]). In regard to applicant's claim that "the alkali metal source is selected from the group consisting of potassium hydroxide and sodium hydroxide", Tomita et al. disclose

...it is preferred to use, as the metal element, a metal element showing an eutectic point of 1,200 to 1,600°C toward silicon dioxide and also use as the metal element, an alkaline earth metal element. It is further preferred to use, as the alkaline earth metal element calcium and/or strontium and also use, as the compound containing the metal element, at least one kind selected from the group consisting of fluorides, carbides, chlorides, silicides, carbonates, **hydroxides**, oxides, inorganic acid salts and organic acid salt (Section [0022]).

5. While Tomita et al. disclose alkaline earth metal hydroxides, as opposed to alkali metal hydroxides, to be used in their invention, it would have been obvious to one of ordinary skill in the art at the time of the invention that any hydroxide would equally serve the purpose of the metal element and therefore the Examiner places the burden upon Applicants to show the patentable difference between the use of an alkaline earth metal hydroxide and either potassium hydroxide or sodium hydroxide.

6. In regard to the amount of alkali metal source present, Tomita et al. disclose

...the content of that at least one kind of metal element to the total of silicon carbide particles and metallic silicon is preferably 0.1 to 10% by mass, more preferably 0.2 to 7% by mass, particularly preferably 0.3 to 5% by mass. By specifying the content of the at least one kind of metal elements in the above range, the wettability between silicon carbide particles and metallic silicon is improved. Incidentally, when the content is below 0.1% by mass, the effect of the metal element is not exhibited; when the content is more than 10% by mass, the amount of the silicate compound phase formed is too large and a significant increase in thermal expansion coefficient may arise; therefore, such contents are not preferred (Section [0051]).

7. Tomita et al. further disclose the method of manufacturing the silicon carbide-based porous material includes:

...the above-mentioned mixed powder or puddle is molded into a desired shape such as a honeycomb shape or the like; the molded material obtained is calcinated for removal (debinding) of the organic binder contained therein; then, the calcinated material is fired in a hydrogen-containing reducing atmosphere to produce a silicon carbide-based porous material having a desired shape (Section [0060]).

8. In regard to claims 9 and 13, Tomita et al. disclose

the content of the metallic silicon to the total of the silicon carbide particles and the metallic silicon is preferably 5 – 50% by mass (Section [0054]).

9. When the metallic silicon is 50% by mass of the total of the silicon carbide particles and the metallic silicon, the total of metallic silicon and silicon carbide would be at least 50% by mass of the total of the aggregate raw material.

10. Tomita et al. is silent in regard to the presence of a pore forming agent.

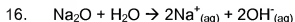
11. Stobbe et al. also teach a porous honeycomb microstructure containing pore-forming agent (Column 6, Lines 36 – 49). Like Tomita et al., Stobbe also teaches the use of raw materials, such as SiC or Si₃N₄ (Column 5, Lines 30 – 33 and Column 7, Line 20).

12. It would have been obvious to one skilled in the art at the time of the invention to add a pore forming agent as taught by Stobbe to the slurry for a ceramic honeycomb made of SiC particles as taught by Tomita to form a more porous honeycomb structure, which yields more efficient exhaust gas filtration.

13. Claims 7, 9, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joulin et al. (U.S. Patent 6,582,796 B1).

14. In regard to claims 7 and 11, Joulin et al. monolith honeycomb structures comprising silicon carbide, a bonding phase consisting of at least one simple oxide, a pore forming agent, an organic plasticizer (binder), and water (Col. 3, Lines 20 – 28). The paste comprising the above components is extruded (Col. 3, Lines 53 - 57), dried (Col. 3, Lines 58 - 63), and calcined (Col. 4, Lines 1 - 7) and fired (Col. 4, Lines 13 - 14). Joulin et al. further disclose 3- 30% by mass of at least one bonding ceramic phase (alkali metal source) in the form of a micronic powder and/or particles that are obtained by atomization, comprising at least one simple oxide that is selected from K_2O , Li_2O , Na_2O (Column 2, Lines 10 - 19), among other compounds, to a mix containing silicon carbide (Column 2, Lines 6 – 8) for making a ceramic honeycomb structure to be formed, dried and heated.

15. Joulin et al. teach the use of oxides such as Na_2O and K_2O . Examiner notes the chemical reaction of an alkali metal oxide in an aqueous slurry yields alkali metal hydroxides as the intermediate product (shown below). Therefore Examiner considers it obvious to use hydroxide powders in place of alkali metal oxides, based upon the disclosure of Joulin et al.



17. Assuming 100% yield of the above reaction, 3 – 30% by mass Na_2O would yield 4 - 39% parts by mass NaOH. This range overlaps with applicants' claimed range of 0.1 - 10 parts by mass. It is well established, however, that the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention

was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549.

18. In addition, Examiner admits the formation of KOH or NaOH in Joulin et al. is "*in-situ*", and not as a raw material. However, Examiner considers this issue to be a matter of mixing the ingredients together before adding to the slurry (as applicants claims), or allowing the mixing to occur within the slurry (as Joulin et al. disclose). According to MPEP 2144.04 [R-6], the selection of any order of mixing ingredients is *prima facie* obvious, see *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930).

19. In regard to claims 9 and 13, Joulin et al. (Column 2, Lines 6 – 8) disclose the amount of silicon carbide to be as great as 97% by mass.

Double Patenting

20. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

21. Claims 7, 9, 10, 11, 13 and 14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9 - 16 of copending Application No. 10/531,578. Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications claim the use of either an alkali metal source or colloidal particles, with a range of 0.01 - 10 parts by mass of alkali metal source with respect to 100 parts by mass of aggregate raw material. This application explicitly states the alkali metal source as the reinforcing material. Application No. 10/531,578 refers to "colloidal particles" as the reinforcing material. However, the specification of 10/531,578 mentions an alkali metal source in the method of manufacture (Sections 0010 and 0033). Therefore, Examiner takes the position alkali metal source of this application and colloidal particles of 10/531,578 are the same.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

22. **In regard to the double patenting rejection**, Applicants argue because copending Application No. 10/531,578 has not issued, filing a Terminal Disclaimer to

obviate a provisional double patenting rejection is premature. See MPEP 706.02(k).

Applicants respectfully request abeyance of the double patenting rejection.

23. Examiner acknowledges a terminal disclaimer to obviate a provisional double patenting rejection is premature. Examiner maintains the rejection.

24. **In regard to applicant's footnote 1**, Applicants note "Applicants assume the Office Action intended to object to claim 7 instead of claim 1, as claim 1 was previously canceled. Accordingly, Applicants' response is based on this assumption.

25. Examiner Gugliotta acknowledges the mistake and apologizes for any confusion that may have resulted. Applicants' assumption is correct.

26. **In regard to the objections under 35 U.S.C. §132(a) over "Lower End Point of One"**, Applicants' have amended claims 7 and 11 to recite "wherein the clay contains 0.01 – 10 parts by mass".

27. Examiner acknowledges the amendment and withdraws the objection.

28. **In regard to the objections under 35 U.S.C. §132(a) over "Potassium Hydroxide and Sodium Hydroxide"**, Applicants argue specification, page 17, lines 2 – 14 and Table 1 of the specification further illustrate the use of both potassium hydroxide and sodium hydroxide as a source of alkali metal.

29. Examiner is persuaded and withdraws the objection¹.

30. **In regard to the rejections under 35 U.S.C. §103 over Yamamoto et al. ,
Kahlenberg, and Noda et al.**

31. Applicant's arguments with respect to claims 7 and 11 have been considered but are moot in view of the new ground(s) of rejection.

32. **In regard to the rejections under 35 U.S.C. §103 over Yamamoto et al.,
Kahlenberg, and Stobbe.**

33. Applicant's arguments with respect to claims 7 and 11 have been considered but are moot in view of the new ground(s) of rejection.

34. **In regard to the rejections under 35 U.S.C. §103 over Joulin et al. and
Blount.**

35. First, Applicants argue "independent claim 7 is a method claim that requires the addition of KOH or NaOH as a raw material, rather than the "*in-situ*" formation of KOH or NaOH as may occur in Joulin after the addition of a simple oxide" (Remarks, Page 10).

36. Applicant's arguments filed 9/3/2008 have been fully considered but they are not persuasive. Examiner agrees the formation of KOH or NaOH in Joulin et al. is "*in-situ*", and not as a raw material. However, Examiner considers this issue to be a matter of

¹ Applicants state (page 6 of the remarks) "Accordingly, reconsideration and withdrawal of the rejection

mixing the ingredients together before adding to the slurry (as applicants claims), or allowing the mixing to occur within the slurry (as Joulin et al. disclose). According to MPEP 2144.04 [R-6], the selection of any order of mixing ingredients is *prima facie* obvious, see *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930).

37. Second, Applicants argue "Joulin teaches the use of significantly more alkaline metal, which is unfavorable in independent claims 7 and 11" (Remarks, Page 10).

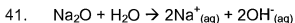
38. Applicants' arguments filed 9/3/2008 have been fully considered but they are not persuasive. Joulin et al. disclose a range as large as 3 - 30% by mass for their alkali metal phase. Applicants' claimed range is within this range and therefore obvious.

39. Third, Applicants argue "It appears that the Office Action may be taking Official Notice that an alkali metal source of KOH and NaOH, as recited in claims 7 and 11, will behave identically as the simple oxides of Joulin if replaced. To the extent the assertions in the Office Action are based on official notice, such bases are not properly established and thus are improper...Here, the application of Official Notice is not established and, thus, is improper at least because Joulin discloses that 18 - 15% of a simple oxide achieves ideal results, whereas the present specification discloses that when alkaline metal exceeds the range recited in claims 7 and 11, as in comparative example 3 (14% KOH), the alkali silicate glass formed by the alkaline metal fills in pores of the calcinated body, and porosity unfavorably decreases. See specification, page 11,

are respectfully requested". Examiner assumes applicants intended to say "objection" instead of

line 23 - page 12, line 2. Thus, it appears simple oxides will not behave identically as KOH or NaOH" (Remarks, Page 11).

40. Joulin et al. teach the use of oxides such as Na_2O and K_2O . Examiner notes the chemical reaction of an alkali metal oxide in an aqueous slurry yields alkali metal hydroxides as the intermediate product (shown below).



42. Assuming 100% yield of the above reaction, 3 – 30% by mass Na_2O would yield 4 - 39% parts by mass NaOH. This range overlaps with applicants' claimed range of 0.1 - 10 parts by mass. It is well established, however, that the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549.

43. Fourth, Applicants argue "Blount does not cure the deficiencies of Joulin because the reference relates to a process for production of flexible glass" (Remarks, Page 11).

44. Applicant's arguments with respect to claims 7 and 11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE T. GUGLIOTTA whose telephone number is (571)270-1552. The examiner can normally be reached on M - Th 8:30 - 6 p.m., & every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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